Discussion

G.E. Blight

This session was very carefully planned and well prepared for those participating as listed speakers. Nevertheless it failed to achieve its objective of providing a stimulating, thought provoking discussion of the properties and problems of arid-zone soils. The object of this report is not to recriminate or to apportion blame for the failure but to analyse the reaons for the failure in the hope, and with the intention that futre organising committees will be able to avoid the pit-falls that this ession fell into.

1. Why was the discussion session a failure ?

Essentially, the event failed because the presentation represented a series of isolated studies that were only vaguely is the field of arid zone soils. Equally, the discussions from the floor represented brief, isolated and disjointed statements. There was no cohesion, no attempt to contribute to and build up a unified, informative theme. Each speaker went his own way.

2. How did this situation arise?

The main reason seems to have been that the organising committee gave too much consideration to national sensibilities and senistivities, and not enough to the coherence of the presented material. They appear to have selected the speakers on a country basis, rather than on a subject basis. For example, "Libya is an arid-zone country, let us ask or so and so from Libya for a contribution".

It would have been better to have selected a Chairman and Co- Chairman first, and to have charged them with providing an interesting discussion session. They could have been provided with suggested speakers from arid-zone countries, but the choice of subject matter and the composition of the programme should have been left entirely to them.

They could have been decided in a theme and suitable contribution to the theme and their approached suitable speaker's with clearly defined requiremments for contributions as lead speakers.

The question of country representation would then have receded into the background and the value interest and technical contribution of the prepared discussions would have been considerably entraced.

In conclusion, I shoud state that all of the discussion sessions that I attended suffered from the defects I have stated above. If there was only coherence in the themes of discussion, it was purely accidental. Almost every session was unsatisfactory to the audience, and I am sure, equally unsatisfactory to the contributors.

I close by reiterating that this report is not intended to be negative, but it is realistic. It is not intended as a criticism of the organising committee, who otherwise have organised magnificiently.

Discussion

Collapsibility as a General Feature of the Soil behaviour

J. Feda (Czech Republic)

Collapse of soil structure means a prompt and profound structural change induced by a relatively small variation of a state parameter. State parameters are physical entities with the direct relation to the structural configuration as characterized by the initial porosity, water content, stress level, time or temperature. Some people classify collapsible soils as a special group of soils. I believe that collapsibility is an inherent feature of all soils whose extent depends on a specific set of state parameters.

Various types of structural collapses may be defined either from the micromechanical or macromechanical standpoint - Fig.1. Optimum point of view seems to be a macromechanical definition accompanied by its micromechanical interpretation.

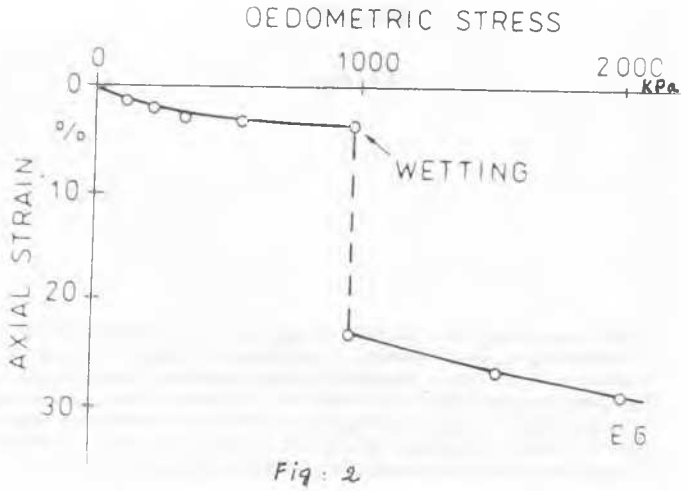

Fig : 2

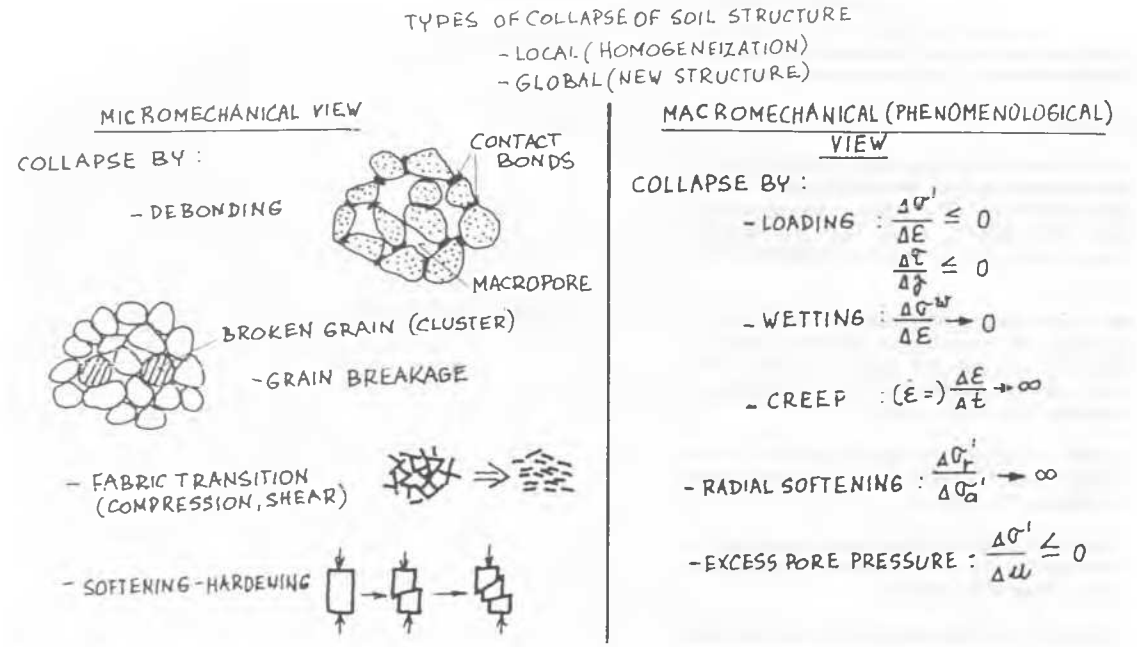

Fig 1 COLLAPSE → RADICAL CHANGE OF STRUCTURE (STATE) → STATE PARAMETERS : $\sigma, w, n_o, t, \varepsilon, T$

Figure 1 shows the most common varieties of soil collapse some of the which will be illustrated by the following examples. Figure 2 depicts the often quoted structural collapse of loess when wetted. It is from the classification point of view a total collapse (whole of the structure is changed) due to debonding (annihilation of brittle structural bonds) when suction rises to zero. Triaxial stress-strain curves in Fig.3 are those of a Miocene clay of Western Bohemia. One of them (marked by open triangles) depicts a local collapse due to debonding in the prepeak deformation stage. This is the behaviour typical of cemented clays. Fig.4 presents the oedometric creep rate of a Carbonci shale. Recorded increase in the creep rate is ascribed to the crushing of shale fragments.

Description of the constitutive behaviour of any soil requires the incorporation of state parameters e.g. in the form a structural tensor. Due to collapsibility no smooth (functional) relationships can generally be expected. In addition, with different soils different state parameters will occupy the prominent position.

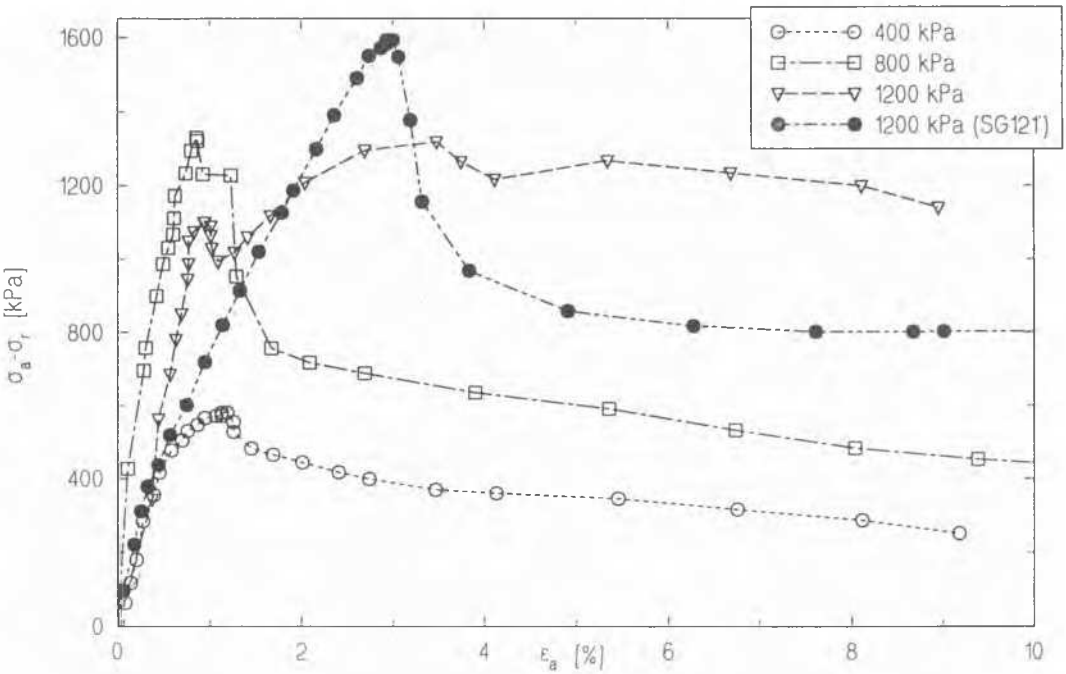
400 kPa
800 kPa
1200 kPa
1200 kPa (SG121)
$\sigma_a - \sigma_r$ [kPa]
ε_a [%]
0
400
800
1200
1600
2
4
6
8
10

Fig: 3

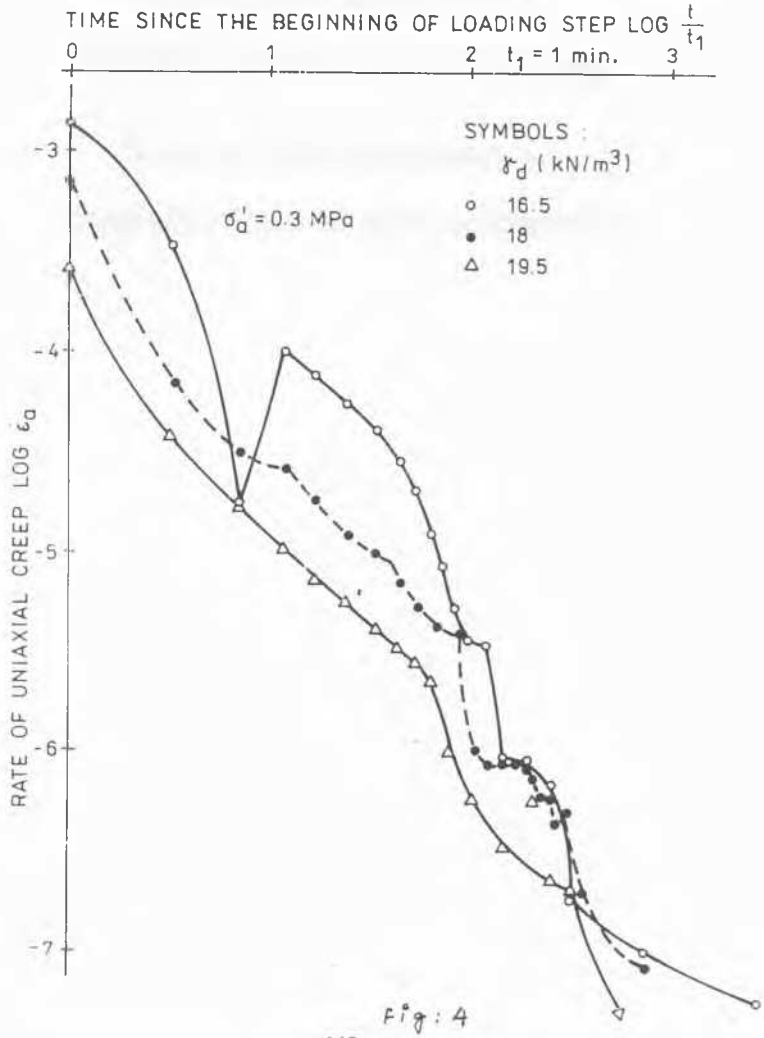
TIME SINCE THE BEGINNING OF LOADING STEP LOG $\frac{t}{t_1}$
t_1 = 1 min.
SYMBOLS :
γ_d (kN/m^3)
16.5
18
19.5
σ_a' = 0.3 MPa
RATE OF UNIAXIAL CREEP LOG $\dot{\varepsilon}_a$

Fig: 4